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APPLICATION UNDER UNITED STATES PATENT LAWS

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Invention: FOLDED BLANK FOR THE MANUFACTURE OF A RIGID WRAPPER

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This is a:

- ☐ Provisional Application
- ☐ Regular Utility Application
- ☐ Continuing Application
 - ☐ The contents of the parent are incorporated by reference
- ☒ PCT National Phase Application
- ☐ Design Application
- ☐ Reissue Application
- ☐ Plant Application

SPECIFICATION

This application is the national phase of international application PCT/IB2005/000480 filed February 18, 2005 which designated the U.S. and that international application was published under PCT Article 21(2) in English. This application claims priority to Italian Patent application number BO2004A 000083, filed February 19, 2004, which is incorporated by reference herein.

12/590173
APS Rec'd PCT/PTO 18 AUG 2006

1

Description

A folded blank for the manufacture of a rigid wrapper

Technical Field

The present invention relates to a folded blank obtained from a flat diecut and used in the manufacture of a rigid carton or packet intended principally to hold sweets and candy, chewing gum and similar edible products.

Background Art

Conventionally, such edible products are marketed and offered to the public enveloped in special packs. One familiar example of such a pack on general sale consists in a packet of box-like appearance, that is to say a rigid wrapper delimiting a container in which to place one or more items of food and/or confectionery. In the general case of parallelepiped containers, hence with rectilinear corner edges, the packets in question are manufactured on packaging machines referred to normally as cartoners.

In these machines, an infeed magazine is filled with stacks of tubular carton blanks, each fashioned from a flat diecut blank scored with crease lines and presenting four walls delimited by the creases.

The single tubular carton blank presents a flat configuration initially, collapsed to form two layers

substantially breasted in contact one with another and joined along two outer crease lines, each layer consisting in two adjacent walls of the carton joined along a relative inner crease line.

5 As the blank advances through the machine, the two layers are spread apart one from another and opened out to establish four longitudinal walls arranged in two mutually opposed and parallel pairs.

10 The wrapper is completed normally by folding up the two opposite ends to form a bottom and a lid.

15 Machines of the type in question are nonetheless unable to process cartons of non-parallelepiped geometry, hence with non-rectilinear corner edges, due to the difficulty of fashioning tubular blanks with curvilinear crease lines.

20 The object of the present invention is to provide a folded blank such as will enable a cartoning machine to fashion cartons or packets of any given shape, and in particular, packets with a hinged lid presenting corner edges of curvilinear outline.

Disclosure of the Invention

25 The stated object is realized according to the present invention in a folded blank presenting a plurality of panels delimited by precreased fold lines, such as can be erected from an initially collapsed configuration to fashion a rigid packet.

 The invention will now be described in detail, by way of example, with the aid of the accompanying drawings, in which:

- figure 1 illustrates a first packet obtained from a folded blank according to the invention, viewed schematically and in perspective after a process of erecting the selfsame blank has been completed;
- 5 -figure 2 is the plan view of a flat diecut blank from which to produce the folded blank used for the manufacture of a packet as in figure 1;
- figure 3 illustrates a first step by which a folded blank is prepared from the flat blank of figure 2;
- 10 -figure 4 shows the folded blank obtained from the flat blank of figure 2, in an initially collapsed configuration, viewed schematically from the front;
- figure 5 shows the folded blank of figure 4, viewed schematically from the rear;
- 15 -figure 6 illustrates a second packet obtained from a folded blank according to the invention, viewed schematically and in perspective after a process of erecting the selfsame blank has been completed;
- figure 7 shows a folded blank from which to erect the packet of figure 6, viewed schematically from the front in an initially collapsed configuration;
- 20 -figure 8 shows the folded blank of figure 7, viewed schematically from the rear in the same initially collapsed configuration;
- 25 -figure 9 shows the folded blank of figures 7 and 8, viewed schematically in perspective and with parts cut away for greater clarity, illustrated in a configuration identifiable substantially with an intermediate step in the process of erecting the
- 30 blank;

-figure 10 shows the folded blank of figures 7, 8 and 9, fully erected, viewed schematically in perspective and with parts cut away for greater clarity;

5 -figure 11 illustrates a flat diecut blank from which to prepare a further and different folded blank according to the present invention;

-figure 12 illustrates a first step by which a folded blank is prepared from the flat blank of figure 11;

10 -figure 13 illustrates a folded blank obtained from the flat blank of figure 11, viewed schematically from the front and shown in the initially collapsed configuration;

-figure 14 shows the folded blank of figure 13, viewed schematically from the rear.

15 Referring in particular to figures 4, 5, 7 and 8 of the accompanying drawings, 1 denotes a folded blank according to the present invention, in its entirety, viewed in an initially collapsed configuration from which it can be erected to form a rigid packet 2 as
20 illustrated in figures 1 and 2.

25 The folded blank 1 is referable to a predominating axis denoted 4, and generated from a flat diecut blank 3 as illustrated by way of example in figure 2, which is referable in turn to a predominating axis denoted 4'.

The flat blank 3 presents a fold line 5, extending transversely to the predominating axis 4', along which it is bent double to create the folded blank 1.

30 The flat blank 3 is divided into a first panel 6, coinciding with the front 7 of the aforementioned

packet 2, a second panel 8 coinciding with the back 9 of the packet 2, also two pairs of lateral panels 10 and 11 hinged respectively to the first panel 6 and to the second panel 8 on opposite sides of the predominating axis 4 and coinciding with the two flanks 60 of the packet 2, as will become clear in due course.

The flat blank 3 further comprises an end panel denoted 12, shaped appropriately to match any one of various conventional styles not described further, coinciding with the top end face or lid 13 of the packet 2, and an end panel denoted 14 coinciding with the opposite end face or bottom 15 of the packet 2.

In the examples of figures 2, 3, 4, 5, 7 and 8, in particular, where the predominating axes 4 and 4' are parallel one with another, the panel denoted 14 is hinged on opposite sides of the fold line 5 to the first panel 6 and to the second panel 8, the fold line 5 establishing an axis of symmetry bisecting the selfsame panel 14, with the result that the folded blank 1 is divided substantially into a first part 16 and a second part 17 offered one to the other in frontal contact, as will become clear in due course.

The flat diecut blank 3, and consequently the folded blank 1 in question, also presents a plurality of crease lines 18, 19 and 20 impressed on the first part 16, of which those denoted 18 and 19 extend transversely to the predominating axis 4, the latter line 19 functioning as a hinge between the first panel 6 and the end panel 14, whilst those denoted 20

extend substantially parallel to the selfsame axis 4 and function as a hinge between the first panel 6 and the relative lateral panels 10.

Similarly, the second part 17 of the blank 3 also presents a plurality of crease lines 21, 22 and 23 extending transversely to the predominating axis 4, of which the lines denoted 21 and 22 serve to delimit the lid 13 of the packet 2 and the line denoted 23 functions as a hinge between the second panel 8 and the end panel 14, delimiting the bottom 15 of the packet 2.

Further crease lines 24 presented by the second part 17 extend parallel to the predominating axis 4 and function as hinges between the second panel 8 and the relative lateral panels 11.

The single blank also presents preferential fold lines 25 extending one along each of the lateral panels 11, parallel to the predominating axis 4, delimiting a first inner lateral portion 26 and a second outer lateral portion 27 of the respective panel 11.

In the particular solution illustrated by way of example, the fold line 25 on each lateral panel 11 establishes an axis of symmetry along which, in the collapsed configuration assumed initially by the folded blank 1, the outer portion 27 is folded and bent double against the relative inner portion 26.

In the examples of figures 4, 5, 7 and 8, more exactly, the first part 16 of the folded blank 1 is bent double and flattened against the second part 17,

and the outer portions 27 presented by the two lateral panels 11 of the second part 17 are anchored each to the corresponding lateral portion 10 of the first part 16, positioned in such a way that when the two parts 16 and 17 of the folded blank 1 are distanced one from the other, and each two lateral portions 26 and 27 caused as a result to rotate about the relative preferential fold line 25, the lateral panels 10 will be brought into full overlapping contact with the respective fold lines 25.

To advantage, in other embodiments of the invention not illustrated herein but adopting the same relative positioning of each outer portion 27 and the corresponding lateral panel 10 as described above, whereby this same panel 10 is made to cover the preferential fold line 25 of the relative matching lateral panel 11 when the folded blank 1 is fully erected, the outer portion 27 can be fastened to the first part 16 of the flat blank 3 utilizing suitable fixing means substantially of conventional type.

In further embodiments, likewise not illustrated, the folded blank 1 might be obtained by scoring a preferential fold line along each of the lateral panels 10 of the first part 16, thereby delimiting respective outer lateral portions that can be bent double against respective inner lateral portions and fastened to the second part 17.

With reference in particular to figure 9, which illustrates an intermediate stage in the erection of the folded blank 1, the lateral panels denoted 10 are

shown anchored in part to the relative outer lateral portions 27 of the corresponding panels 11 by means of an interposed layer of adhesive 28, and projecting temporarily from these same lateral portions 27.

5 With the folded blank 1 fully erected, as shown in figure 10, the flanks 60 and the bottom end face 15 of the packet 2 assume their final configuration, in particular, with each flank 60 defined by the pairing of two corresponding lateral panels 11 and 10, with
10 the panel 10 of the one part 16 covering the panel 11 of the other part 17 and concealing the relative preferential fold line 25; employing a conventional method not described in the present specification, the fully erected blank 1 emerges with each lateral
15 panel 10 of the one part 16 glued over its entire surface to the relative lateral panel 11 of the other part 17.

Observing the preferred embodiments illustrated in figures 2 to 5 and in figures 7 and 8, each of the
20 lateral panels denoted 10 comprises a flap 29, delimited by the crease line denoted 18, such as will interact with the lid 13 in retaining the contents (not illustrated) internally of the packet 2.

The packet 2 will be completed, proceeding from the
25 configuration of figure 5, by making a succession of folds in the end panel 12 of the blank 1 to fashion the lid 13, employing substantially conventional methods.

Figures 13 and 14 illustrate a folded blank 1
30 obtained from a flat diecut blank 3 as in figures 11

and 12, for use in the manufacture of a packet (not illustrated) presenting curvilinear contours.

Observing the solution of figures 13 and 14, it will be appreciated that there are certain essential differences between this and the solutions described above.

First of all, and in particular, it will be seen that the fold line 5 in the flat diecut blank 3, along which the first and second parts 16 and 17 of the folded blank 1 are bent double, coincides with a preferential fold line 25 scored on a lateral panel denoted 30, parallel to the predominating axis 4 of the blank; in this solution, therefore, the panel 30 in question functions both as a lateral panel 10 of the first panel 6 and as a lateral panel 11 of the second panel 8.

In effect, the lateral panel 30 is common to the first panel 6 and the second panel 8, given that these same two panels 6 and 8 are hinged to the lateral panel 30 by way of respective crease lines 20 and 24 on opposite sides of the fold line 5.

Significantly, in this embodiment of the invention, the predominating axis 4' of the flat diecut blank 3 extends substantially transverse to the predominating axis 4 of the folded blank 1.

The flat blank 3 is bent along the fold line 5, hence at one and the same time along the preferential fold line 25 of the lateral panel 30, which is thus divided into an inner portion 26, adjacent to the second panel 8, and an outer portion 27 adjacent to

the first panel 6, so that in the initially collapsed configuration, these same two portions 26 and 27 are bent double and flattened one against another.

As in the solutions described and illustrated previously, the panel denoted 10 is again anchored to the outer portion 27 of the panel denoted 11, and the step of distancing the first part 16 and the second part 17 of the folded blank has the effect of erecting the packet 2 and thereupon causing the lateral panel 10 to cover the relative preferential fold line 25.

In the example of figures 11 to 14, the end panel denoted 14 presents a plurality of appendages 31 delimited by a relative crease line 23, such as can be folded flat against the panel 14 to form the bottom 15 of the packet 2.

The present invention also relates to a method of preparing a folded blank 1 as described and illustrated.

With reference in particular to figures 2 to 5 and figures 11 to 14, such a method includes the steps of bending the lateral panel or panels 11 of the second panel 8 along the preferential fold line 25, so as to obtain a semi-folded blank as in figures 3 and 12, and then bending the first part 16 flat over the second part 17 to obtain the folded blank 1 as shown in figures 4, 5, 13 and 14.

Observing the folded blank 1, to reiterate, each outer portion 27 is positioned relative to the corresponding lateral panel 10 in such a way that

when the folded blank 1 is erected, the panel 10 will overlap the preferential fold line 25 of the corresponding lateral panel 11 at least in part.

5 In particular, the overlapping stage includes the step of bending the first and second parts 16 and 17 of the flat diecut blank 3 along the fold line 5.

To advantage, the folded blank 1 is prepared by fastening the second outer portions 27 of the lateral panels 11 to the first part 16, and in particular to
10 the corresponding lateral panels 10.

It will be seen, in the case of the packet 2 with curvilinear contours illustrated in figure 1, that the packet is easily assembled by erecting the folded blank 1, illustrated in figures 4 and 5, on a
15 cartoning machine of conventional embodiment.

Advantageously, with a folded blank 1 as shown in figures 7 and 8, used to manufacture a parallelepiped packet as in figures 9 and 10, the flanks 60 of the packet are strengthened by bonding together the
20 relative pairs of lateral panels 10 and 11 and by the presence of the preferential fold line 25 on each of the panels denoted 11, thereby allowing the adoption of a thinner cardboard than would be used normally to manufacture such packets.

25 Similarly, in the case of the folded blank 1 shown in figures 13 and 14, the relative packet presenting curvilinear contours (not illustrated) can be erected on a conventional cartoning machine.